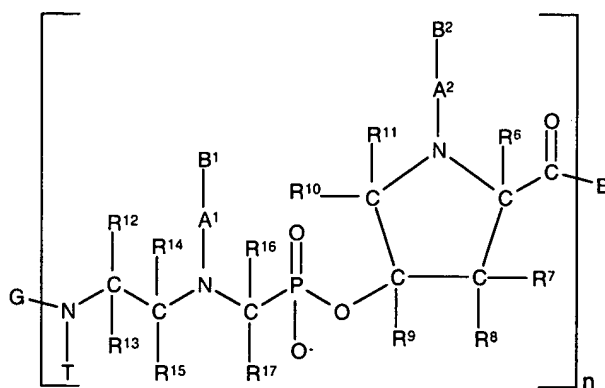


Claim Status

1-107. (canceled)

108. (previously amended) A compound comprising the structure:

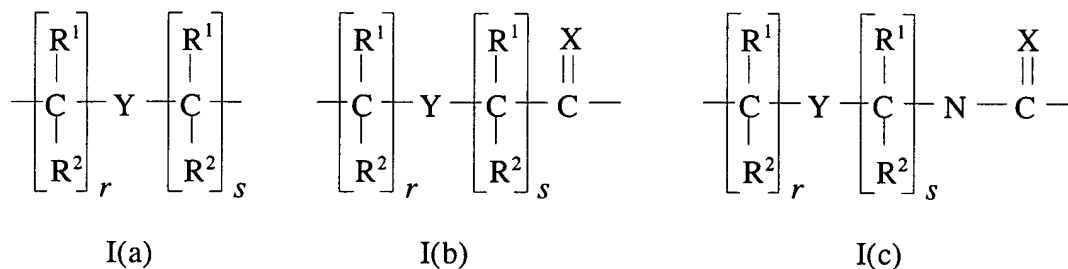


wherein G is selected from a group consisting of H and is a protecting group;

wherein E is selected from a group consisting of O-, OH, a protecting group, and an activating group;

wherein each B¹ and B² is independently selected from the group consisting of H and a nucleobase, and wherein amino groups, if present, are, optionally, protected by amino protecting groups;

wherein each A¹ and each A² is, independently, is a group of formula (Ia), (Ib), or (Ic);



wherein r and s are, for I(a), I(b), and I(c) independently of one another, values from 0 to 5;

wherein each R^1 and each R^2 is, independently, hydrogen, (C₁–C₆)alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted (C₁–C₆)alkyl, hydroxy, alkoxy, alkylthio, amino, or halogen;

wherein each R^4 and each R^5 is, independently, hydrogen, (C₁–C₆)alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted (C₁–C₆)alkyl, hydroxy, alkoxy, amino, aryl, aralkyl, heteroaryl, or an amino acid side chain;

Y is a single bond, O, S, or NR^4 ; and

X is O, S, Se, NR^5 , CH_2 , or $C(CH_3)_2$;

wherein each R^6 is, independently, hydrogen, (C₁–C₆)alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted (C₁–C₆)alkyl, aryl, aralkyl, heteroaryl, or an amino acid side chain;

wherein R^7 is, independently, hydrogen, (C₁–C₆)alkyl, hydroxy-, alkoxy-, amino, or alkythio-substituted (C₁–C₆)alkyl, hydroxy, alkoxy, alkylthio, amino, aryl, aralkyl, heteroaryl, or hydrogen, and R^8 is hydrogen, (C₁–C₆)alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted (C₁–C₆)alkyl, aryl, aralkyl, or heteroaryl; or R^7 is hydrogen, (C₁–C₆)alkyl, hydroxy-, alkoxy-, amino-, or alkythio-

substituted (C₁–C₆)alkyl, aryl, aralkyl, or heteroaryl, and R⁸ is hydrogen, (C₁–C₆)alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted (C₁–C₆)alkyl, hydroxy, alkoxy, alkylthio, amino, aryl, aralkyl, heteroaryl, or halogen;

wherein each R⁹ is independently, hydrogen, (C₁–C₆)alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted (C₁–C₆)alkyl, alkoxy, aryl, aralkyl, or heteroaryl;

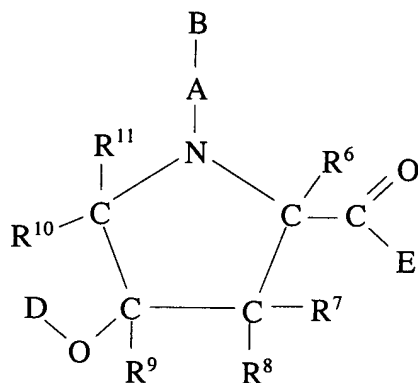
wherein each R¹⁰ and each R¹¹ is, independently, hydrogen, (C₁–C₆)alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted (C₁–C₆)alkyl, aryl, aralkyl, heteroaryl, or an amino acid side chain;

wherein each R¹², R¹³, R¹⁴, R¹⁵, R¹⁶, and each R¹⁷ is, independently, hydrogen, (C₁–C₆)alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted (C₁–C₆)alkyl, hydroxy, alkoxy, alkylthio, aryl, aralkyl, heteroaryl, or an amino acid side chain;

wherein T is hydrogen, (C₁–C₆)alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted (C₁–C₆)alkyl, hydroxy, alkoxy, alkylthio, aryl, aralkyl, heteroaryl, or an amino acid side chain; and

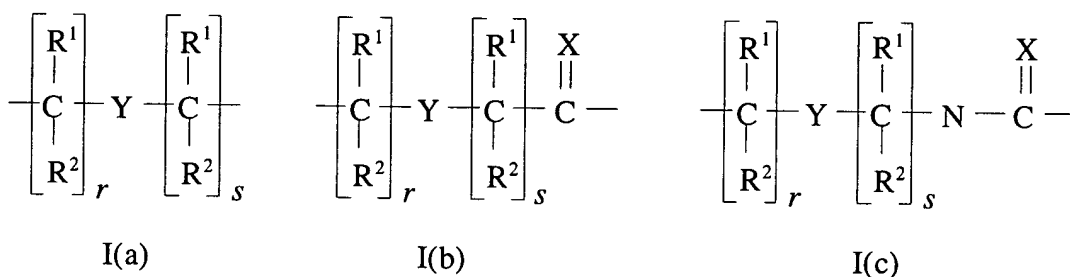
n is 1 or greater,
and salts thereof.

109. (previously added) The compound of claim 108, wherein *n* is 2 or greater.
110. (previously amended) The compound of claim 109, wherein said compound further comprises a compound selected from the group consisting of a phosphono peptide nucleic acid monomer and a compound comprising the structure:



wherein B is selected from the group consisting of H, a naturally occurring nucleobase, and a non-naturally occurring nucleobase, wherein amino groups are, optionally, protected by amino protecting groups;

wherein A is a group of formula (Ia), (Ib), or (Ic);



wherein r and s are, for I(a) and I(b), independently of one another, values from 0 to 5 and are, for I(c), independently of one another, values from 1 to 5;

wherein each R^1 and each R^2 is, independently, hydrogen, $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy, alkoxy, alkylthio, amino, or halogen;

wherein each of R^3 , R^4 , and R^5 , is, independently, hydrogen, $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy, alkoxy, amino, aryl, aralkyl, heteroaryl, or an amino acid side chain;

Y is a single bond, O, S, or NR^4 ; and

X is O, S, Se, NR^5 , CH_2 , or $\text{C}(\text{CH}_3)_2$;

wherein R^6 is hydrogen, $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted $(\text{C}_1 - \text{C}_6)$ alkyl, aryl, aralkyl, heteroaryl, or an amino acid side chain;

wherein R^7 is hydrogen, $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy, alkoxy, alkylthio, amino, aryl, aralkyl, heteroaryl, or halogen, and R^8 is hydrogen, $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted $(\text{C}_1 - \text{C}_6)$ alkyl, aryl, aralkyl, or heteroaryl; or R^7 is hydrogen, $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted $(\text{C}_1 - \text{C}_6)$ alkyl, alkoxy, aryl, aralkyl, or heteroaryl, and R^8 is hydrogen, $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy, alkoxy, alkylthio, amino, aryl, aralkyl, heteroaryl, or halogen;

wherein R^9 is hydrogen, $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted $(\text{C}_1 - \text{C}_6)$ alkyl, alkoxy, aryl, aralkyl, or heteroaryl;

wherein each of R^{10} and R^{11} is, independently, hydrogen, $(\text{C}_1 - \text{C}_6)$ alkyl, hydroxy-, alkoxy-, amino-, or alkythio-substituted $(\text{C}_1 - \text{C}_6)$ alkyl, aryl, aralkyl, heteroaryl, or an amino acid side chain;

wherein D is a protecting group compatible with the conditions of ester, amide, or phosphonoester bond formation, R^{18} , or $\text{NR}^{18}\text{R}^{19}$;

wherein E is O^- , OCH_3 , a protecting or activating group compatible with ester, phosphoester, or phosphonoester bond formation, R^{20} , $\text{NR}^{20}\text{R}^{21}$, or OR^{20} ; and

wherein each R^{18} , R^{19} , R^{20} , and R^{21} is, independently, selected from the group consisting of hydrogen, $(\text{C}_1 - \text{C}_6)$ alkyl, an amino protecting group, a reporter

group, an intercalator, a chelator, a peptide, a protein, a carbohydrate, a lipid, a steroid, a nucleotide or oligonucleotide, and a soluble or nonsoluble polymer.

111. (previously added) The compound of claim 110, wherein the compound comprises phosphono peptide nucleic acid monomer subunits and subunits having the structure presented in claim 110 in a ratio of between about 3:5 to about 15:1.
112. (previously added) The compound of claim 108, wherein at least one B¹ or at least one B² is a nucleobase.
113. (previously added) The compound of claim 112, wherein at least one B¹ or at least one B² is a naturally-occurring nucleobase.
- 114-129. (cancelled)